

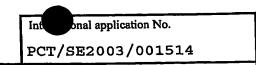
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION See Form PCT/IPEA/416								
PC-21006045	International filing date (day/month/year) Priority date (day/month/year)		Priority date (day/month/year)						
International application No.		monunyeur)	2002-09-20						
202/022000/002022									
International Patent Classification (IPC) or national classification and IPC									
G09B 23/28									
,									
Applicant									
Göteborg University Surgical Science AB et al									
 This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 									
2. This REPORT consists of a total	of 3 sheets, inc	cluding this cover	sheet.						
3. This report is also accompanied by	3. This report is also accompanied by ANNEXES, comprising:								
a. (sent to the applican	7								
sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the									
	ive Instructions). 1 supersede earlier sheets, but v	which this Author	ity considers contain an amendment that goes						
beyond the	sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.								
			number of electronic corrige(a))						
b (sent to the Internati	b (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s))								
	, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).								
4. This report contains indications	relating to the following items:								
	of the report								
Box No. II Priori	ity								
Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial ap			inventive step and industrial applicability						
Box No. IV Lack	of unity of invention								
	oned statement under Article 35 cability; citations and explanati		o novelty, inventive step or industrial ach statement						
	in documents cited	0							
Box No. VII Certa	in defects in the international a	application	•						
Box No. VIII Certa	in observations on the internati	ional application							
Date of submission of the demand	Tr	Date of completion	of this propert						
Date of submission of the demand		vate of completion	n or uns report						
26-04-2004		12-01-2005							
Name and mailing address of the IPEA		Authorized officer							
Patent- och registreringsverke		radionized officer							
Box 5055 S-102 42 STOCKHOLM	S-102 42 STOCKHOLM Erik Miliander/MN								
Facsimile No. +46 8 667 72 88		Telephone No. +46 8 782 25 00							

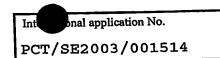
Form PCT/IPEA/409 (cover sheet) (January 2004)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



Box	No. I	Basis of the re	eport					
1.	 With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item. 							
	Ш	This report is base which is the langua	d on a translation from the original language into the following languageage of a translation furnished for the purposes of:					
		internation	international search (under Rules 12.3 and 23.1(b))					
		publication	on of the international application (under Rule 12.4)					
		internatio	nal preliminary examination (under Rules 55.2 and/or 55.3)					
2.	furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):							
	닐		application as originally filed/furnished					
	Ш	the description:						
				nally filed/furnished				
ĺ		pages*	received by this Authority on received by this Authority on					
			icceived by this Audiority on					
	M	the claims:	an anim	nally filed/furnished				
		pages*	as amended (together with any stater	•				
			received by this Authority on 22-12-2					
1			received by this Authority on					
1		the drawings:						
		pages	as orig	inally filed/furnished				
l		pages*	received by this Authority on					
		pages*	received by this Authority on					
		a sequence listin	ng and/or any related table(s) - see Supplemental Box Relating to Sequence Listing	5.				
3.		The amendment	s have resulted in the cancellation of:					
l		the de	scription, pages					
		the cla	aims, Nos.					
			awings, sheets/figs	_				
1		the se	quence listing (specify):	_				
		any ta	ble(s) related to the sequence listing (specify):	-				
4	. [been established as if (some of) the amendments annexed to this report and lize have been considered to go beyond the disclosure as filed, as indicated in the					
		the de	escription, pages	_				
			aims, Nos.	_				
			rawings, sheets/figs	-				
			equence listing (specify):					
			able(s) related to the sequence listing (specify):	_				
,	* If item 4 applies, some or all of those sheets may be marked "superseded."							
L			7 7 7					





Box	No. V	Reasoned statement un citations and explanati	der Article 3 ons supportin	5(2) with regard to novelty, inventive s g such statement	tep or industrial applicability;
1.	Statement				
	Novel	tv (N)	Claims	1-12	YES
İ	110101	., (14)	Claims		NO
	Inventive step (IS)		Claims	1-12	YES
	Inven	ave step (15)	Claims		МО
	Indus	strial applicability (IA)	Claims	1-12	YES
			Claims		NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1: US5771181 A
D2: US6336812 B1
D3: WO9628800 A1
D4: WO0178039 A2

The cited documents represent the general state of the art. The invention defined in claims 1-12 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed surgical simulation system in which different virtual anatomic environments can be generated by assembling models of local anatomic environments. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-12 is novel and is considered to involve an inventive step. The invention is industrially applicable.

5

10

20

12

CLAIMS

1. A method for generating a virtual anatomic environment (4) for use in a computer based visual simulation of minimally invasive surgery, comprising the steps of:

providing a main virtual anatomic environment (1), selecting a local anatomic environment (2) from a predefined library (3) comprising a set of two or more separately modelled local anatomic environments (2),

including the selected local anatomic environment (2) in said main anatomic environment (1) to form said virtual anatomic environment (4),

thereby allowing generation of different virtual en-15 vironments.

- 2. A method according to claim 1, wherein said set of local anatomic environments (2) is arranged to represent a set of anatomic variations for a critical internal area, occurring in living beings.
- 3. A method according to claim 1 or 2, wherein the step of selecting a local anatomic environment (2) from a predefined library (3) comprising two or more of simulated local anatomic environments (2) further comprises the step of randomly selecting one of the local anatomic environments (2) in the library (3).
- 4. A method according to claim 3, wherein the
 probability of randomly selecting a certain local anatomic environment (2) essentially corresponds with the degree of occurrence of that local anatomic environment in
 living beings.
- 5. A method according to any one of the preceding claims, wherein the main virtual anatomic environment (1) is arranged to model an internal cavity (5) of a human,

such as an abdominal cavity or a chest cavity, while the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts (7) around an organ (6) arranged in said internal cavity (5), such as a gall bladder or a heart.

5

15

30

35

- 6. A method according to any one of the claims 1-2 or 5, further comprising the step of selecting, by means of user selection, a certain one of said local anatomic environments (2) from said library (3) and including it into said main virtual environment (1).
 - 7. A device for generating a virtual anatomic environment (4) for use in a computer based visual simulation of minimally invasive surgery, comprising:
 - a modelling device (15) for providing a main virtual anatomic environment (1),
 - a library (3), comprising a set of two or more separately modelled local anatomic environments (2),
- means for incorporating one of the local anatomic environments (2) of the library (3) into the main virtual anatomic environment (1), together forming said virtual anatomic environment (4),

thereby allowing generation of different virtual en-25 vironments.

- 8. A device according to claim 7, further comprising a selection device (9) for selecting one of said local anatomic environments (2) from said library (3) to be included in said main anatomic environment.
- 9. A device according to claim 8, wherein the selection device (9) is arranged to randomly select one of said local anatomic environments (2) from said library (3) to be included in said main anatomic environment.



14

- 10. A device according to claim 9, wherein the selection device (9) is arranged to randomly select one of said local anatomic environments (2) in such a way that the probability of selecting a certain local anatomic environment (2) essentially corresponds with the degree of occurrence of that local anatomic environment in human beings.
- 11. A device according to any one of the claims 710 10, wherein the main virtual anatomic environment (1) is
 arranged to model an internal cavity (5) of a human, such
 as an abdominal cavity or a chest cavity, while the set
 of local anatomic environments (2) is arranged to simulate different arrangements of arteries, veins and ducts
 15 (7) around an organ (6) arranged in said internal cavity
 (5), such as a gall bladder or a heart.
- 12. A computer-based minimal-invasive surgery simulation system, comprising a device for generating a virtual anatomic environment as described in any one of the claims 7-11.